

Predictors Of Sustained Weight Loss - A Quasi-randomized Trial

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CONFLICT OF INTEREST DISCLOSURE

I have no potential conflict of interest to report



INTRODUCTION

- **Obesity is a complex metabolic disorder and a potential risk factor for many NCD**
- BMI¹ is the metric used to classify the severity
- WHO has defined **obesity** as a **chronic and progressive disease**
- BMI ≥ 30 kg/m² increases the risk of developing diabetes 7-fold in men and 12-fold in women^{*}

*Guh DP et al, The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis. BMC Public Health 2009



INTRODUCTION

- **Global burden of overweight to be 44% and that of obesity to be 45 percent by 2030**©
- Projections were based on 2005 data and global BMI criteria for overweight ($>25 \text{ kg/m}^2$) and obesity ($>30 \text{ kg/m}^2$)©
- **Conventional modalities are the preferred choice of healthcare providers in India, with 7–10% of initial weight loss within 6–12 months***

*WHO Obesity: preventing and managing the global epidemic
[http://www.who.int/entity/nutrition/publications/obesity/WHO TRS 894](http://www.who.int/entity/nutrition/publications/obesity/WHO_TRS_894)

© Kelly T, Yang W, Chen C-S, Reynolds K, He J. Global burden of obesity in 2005 and projections to 2030. Int J Obes



INTRODUCTION

- Calorie-deficit diet, in combination with increased energy expenditure through physical activities, remains the cornerstone of conventional weight loss strategies, irrespective of their efficacy and long-term sustainability for different BMI categories
- Therefore, it is required to weigh the efficacy of the treatment strategy

Rationale

- Conventional modalities - mostly inconsistent
- Intervention periods were short-term (≤ 6 months)
- The primary objective: to see improvement in co-morbidities
 - NOT the **sustainable weight loss and its overall health impact**
- Given the above facts, it was proposed to carry out a long-term supervised nutritional and lifestyle modification study & weigh the effectiveness of the sustainable weight loss outcome through conventional structured long-term weight loss management in BMI ≥ 25 kg/m²

OBJECTIVES

- To identify the predictors of sustainable weight loss outcome in BMI ≥ 25 kg/m² over one year

METHOD

Study Design: Prospective cohort study

- **Inclusion criteria:** All consented individuals with BMI ≥ 25 between 18-65 years were enrolled in the study
- **Exclusion criteria:** Pregnant, lactating mothers and acute chronic illnesses

METHOD

Intervention:

- Detailed clinical and nutritional evaluations, WHO quality of life (WHOQoL), Global Physical Activity Performa (GPAQ)done at baseline, 3,6- and 12-month intervals
- Dysfunction analysis questionnaire (DAQ) - 3 month, 6 months, 1 year
- Kuppuswami Socio-Economic Status Scale (KPS Scale)- Baseline
- Food Frequency- Baseline
- 24-hour Dietary Recall- at every visit



Laboratory Investigation

1. Complete blood count (CBC) with platelets
2. Fasting blood sugar (FBS)
3. Fasting insulin level (FIL)
4. Blood urea nitrogen (BUN) and Serum creatinine (S.Cr.)
5. Liver function test (LFT)
6. Serum electrolytes, including sodium, potassium, calcium and phosphorus
7. Serum lipid profile
8. Serum TSH, T₄
9. HbA1C for diabetic patients

METHOD

Intervention:

- Calorie-deficit diet- aiming 3-5 kg weight loss per month
- Detailed counselling
- Educational materials were provided
- Yoga classes and support group meetings
- Telephonic consultation every month
- Individual detailed counseling at baseline, 3,6- and 12-month intervals

OUTCOME VARIABLES

- Change in weight at 3-, 6- and 12-month intervals
- Excess weight loss at 3-, 6- and 12- month interval
- Change in waist circumference and the waist-hip ratio at 3-, 6- and 12-month intervals
- Impact on quality of life at 3-, 6- and 12- month intervals
- Physical activity level and eating practices at 3-, 6- and 12- month intervals

Additional Weight Loss Support

Reading materials developed for nutritional education, health awareness as a treatment strategy and cost-effective nutritional support

- 1.The Patient Guide: Identification, Evaluation and Treatment of Overweight and Obesity in Adults
- 2.Pictorial printable materials were developed on diet and exercise
3. Be your own weight loss guide
- 4.Support group meetings were conducted



RESULTS

Variables		Overweight Group- (Group-1) [#] n=83	Obese (Group-2) [#] n=121	BMI≥35kg/m ² (Group-3) [#] n=81	P value ^a
Age	Overall	37.4 ±10.9	40±10.8	39.1 ± 11.1	0.259
KPS SCORE		21.3±5.3	22 ± 5.4	20.3 ± 4.9	0.079

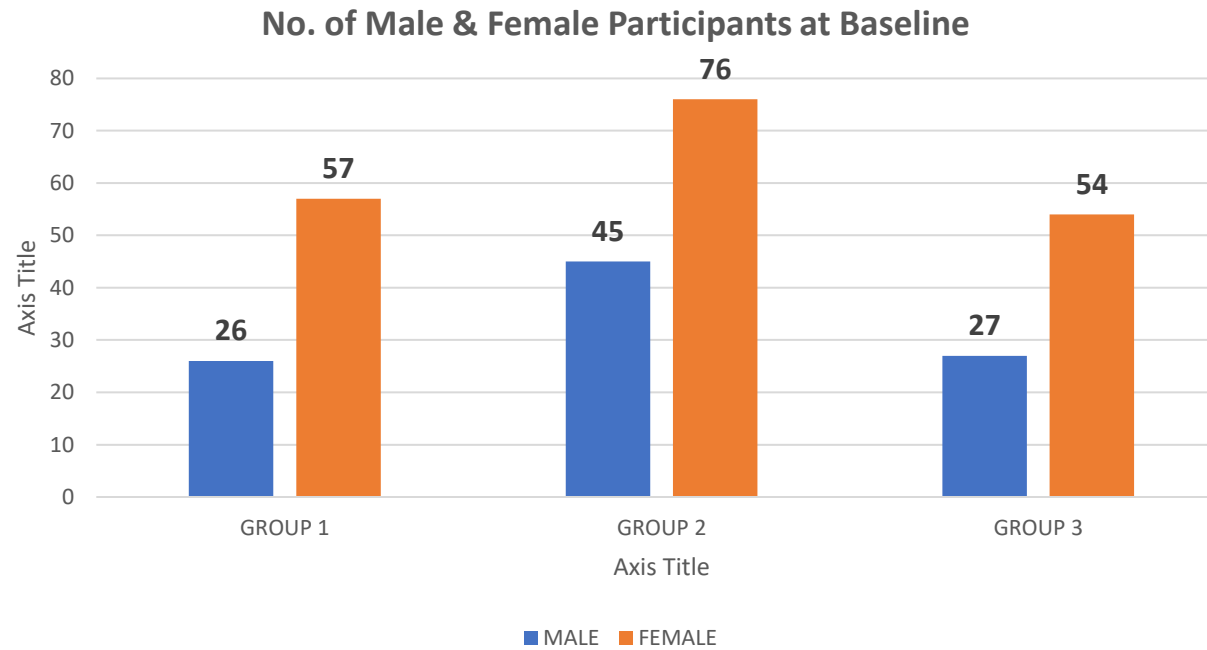
^a One-way Anova

[#] Values *reported as Mean± SD*

KPS Score:

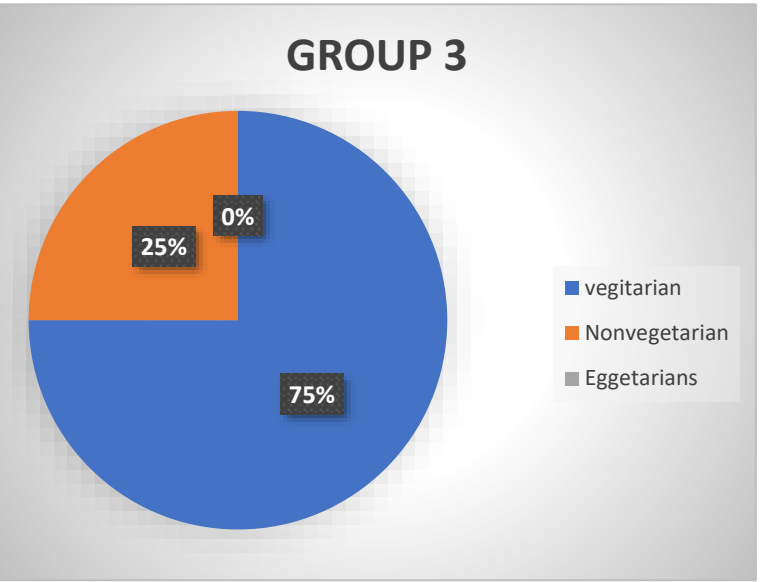
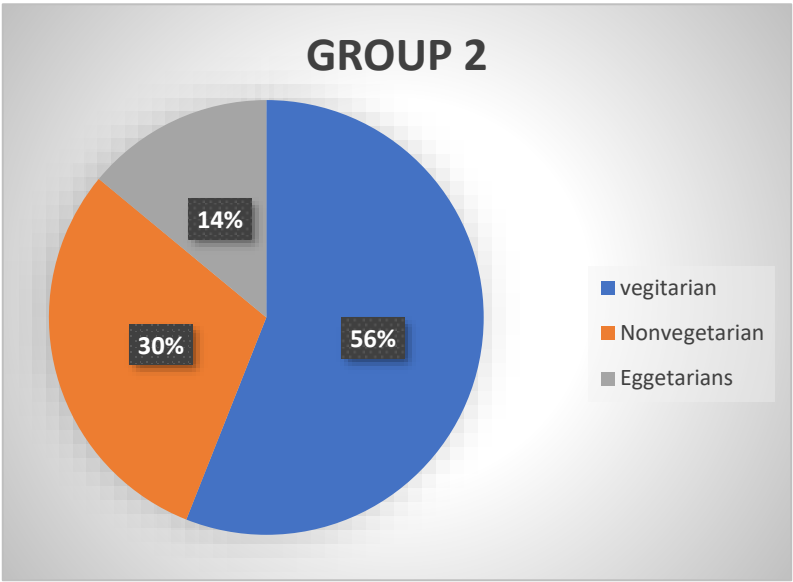
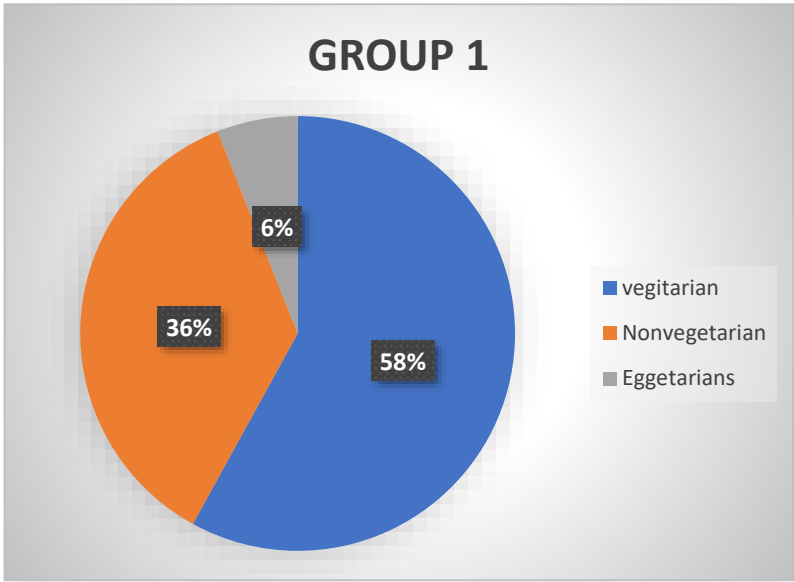
- The socioeconomic status (SES) of all subjects was analysed by the Kuppuswami SES scale.
- The mean value of all subjects reflects that the maximum respondents were undergraduates, not highly placed and, were skilled workers, housewife/ unemployed, in clerical jobs, shopkeepers or farmers. Mean total score among all groups corresponds with the upper middle class.

RESULTS



Male and female participants' ratio was approximate 1:2 in each group

Comparison of vegetarian vs. non-vegetarian eating patterns among study subgroups



GROUP 1: overweight $\geq 25-29.9 \text{ kg/m}^2$

GROUP 2: obesity $\geq 30-34.9 \text{ kg/m}^2$

GROUP 3: BMI $\geq 35 \text{ kg/m}^2$ with or without comorbidities or morbidly obese patient who opt for non-surgical treatment for weight reduction

RESULTS

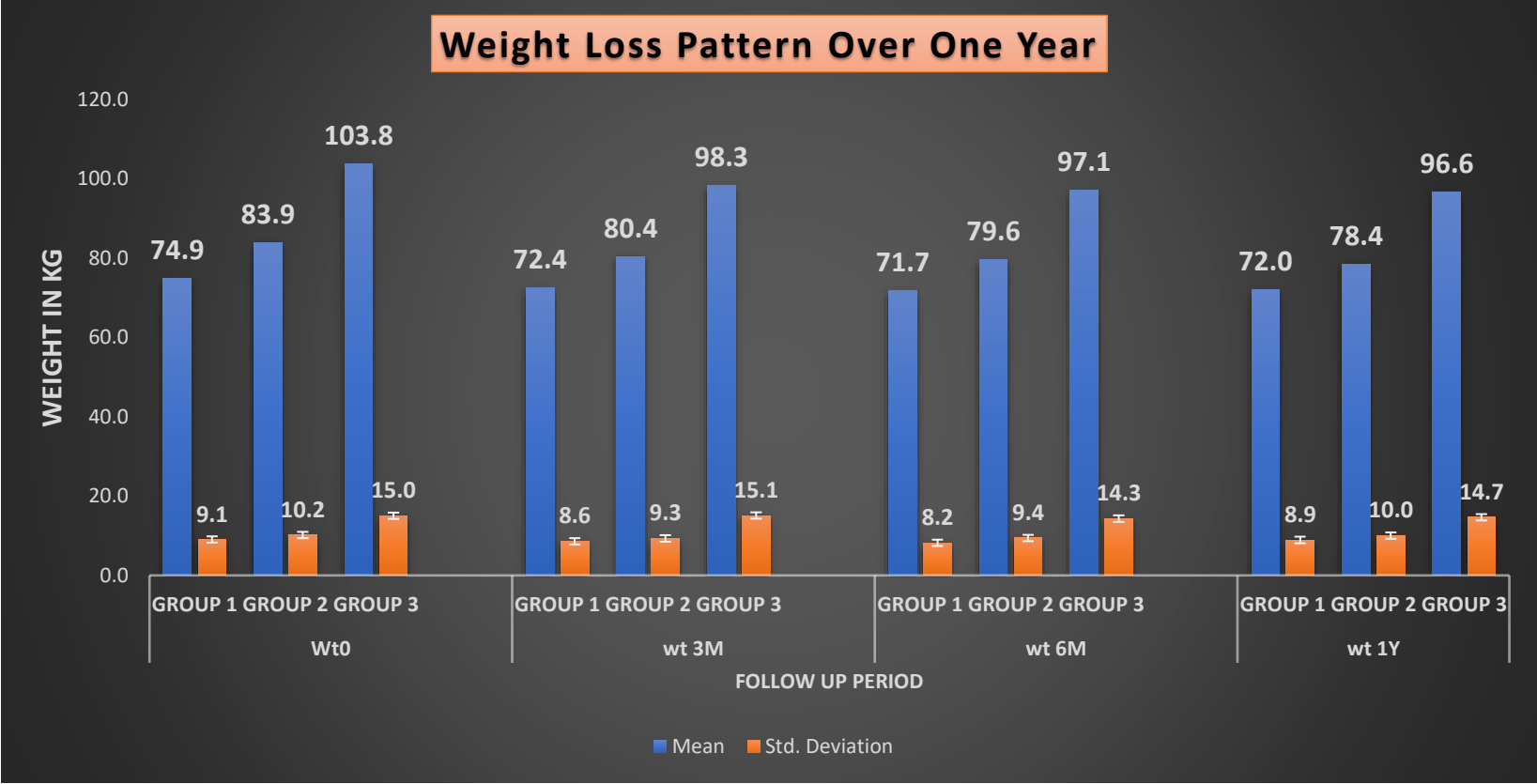
Obesity-associated comorbidities	Overweight n=83	Obese n=121	BMI \geq 35 kg/m² Nonsurgical n=81
Total DM	12 (14%)	17 (14%)	17 (21%)
DM >5 years	6 (7%)	9 (7.4%)	9 (11%)
DM < 5 years	6(7%)	8 (6.6%)	8 (10%)
Oral hypoglycaemic agent (OHA)	11	12	15
Insulin + OHA	1	1	1
Insulin alone	-	-	1
Exclusively Diet & Exercise	-	4	-
Hypothyroidism	7 (8%)	16 (13%)	11(14%)
Hypertension	21 (25%)	26 (21%)	26 (32%)
Dyslipidemia	1(1%)	7(6%)	5 (6%)

RESULTS

Comparison of other health complications among study participants

Other health complication	Overweight (OW) n=83	Obese (O) n=121	BMI\geq35 kg/m² Nonsurgical n=81
Snoring + Obstructive sleep apnea (OSA)	-	2 (2%)	7 (9%)
Hernia	2(2%)	9 (7%)	2 (2%)
Gastric Esophageal Reflux Disease (GERD)	1(1%)	4 (3%)	2 (2%)
Gall stone disease (GSD)	-	4 (3%)	1 (1%)
Knee/Back Pain	5(6%)	18 (15%)	11 (13%)
Other	16 (19%)	20 (16%)	15 (18%)

RESULTS



RESULTS

Univariate Analysis among study participants

Clinical Variables	Unadjusted Regression Coefficient	95% CI	p Value
Diabetes	1.13	-7.6 - 9.9	0.80
Other Health Issues	5.46	-1.58 – 12.5	0.128
Hypertension	-.32	-6.5 – 5.9	0.92
Hypothyroidism	-3.9	-13.6-5.7	0.42
Joint Pain	2.28	-6.06 -10.6	0.54

RESULTS

Univariate Analysis among study participants

Variable Physical Activity	Unadjusted Regression Coefficient	Coefficient (95% CI)	p Value
Total Met Minute Baseline	0.001	.004 -.006	0.59
Total Met Minutes 3 months	.025	.005-.044	0.002
Total Sedentary Minutes at baseline	-.016	-.033-.001	0.065

RESULTS

Univariate Analysis among Study Participants

Variables WHOQOL	Coefficient	95% CI	p Value
DOM-1	.053	-.221 -.328	0.700
DOM-2	.124	-.118 -.367	0.315
DOM-3	.022	-.212 -.256	0.852
DOM-4	.133	-.130 -.387	0.329
OA-1	3.72	-.333- 7.780	0.072
OA-2	-.058	-.01 3 - .078	0.162

RESULTS

Univariate Analysis among Study Participants

Variables DAQ	Coefficient	95% CI	p Value
SA	-.56	-1.03 - .088	0.020
VA	-.62	- 1.18 - .063	0.029
PA	-.80	-1.27 - -.326	0.001
FA	-.43	-1.02 - -0.148	0.143
CA	-.35	-1.018 - .305	0.289
TOTAL	.032	-.013 - .078	0.162

RESULTS

Multivariate Regression Analysis

Variables	Unadjusted Regression Coefficient	95% CI	p Value
EWL 3 month	3 kg	2.1 - 3.8	0.001
Sitting Time 3 months	-.029	-.05 - .013	0.001

p Value < 0.05 considered significant

RESULTS

- Patients having an average of 3 kg weight loss have sustained weight loss at 12 months interval
- A minute change in sitting time at 3 months level found significant impacts on the weight loss journey by 0.02 kg gain at 12 months interval

Discussion



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Obesity (Silver Spring). 2015 June ; 23(6): 1320–1325. doi:10.1002/oby.21087.

Lifestyle and Weight Predictors of a Healthy Overweight Profile over a 20 year Follow-up

Michael Fung, HBa, Karissa L. Canning, MSc, Paul Mirdamadi, MSc, Chris I. Ardern, PhD, and Jennifer L. Kuk, PhD

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Abstract

Objectives—To examine whether changes in modifiable risk factors (physical activity, cardiorespiratory fitness (CRF), body weight and diet composition) are associated with the

20 yrs-24.5-31.1 kg (47% O FROM OW

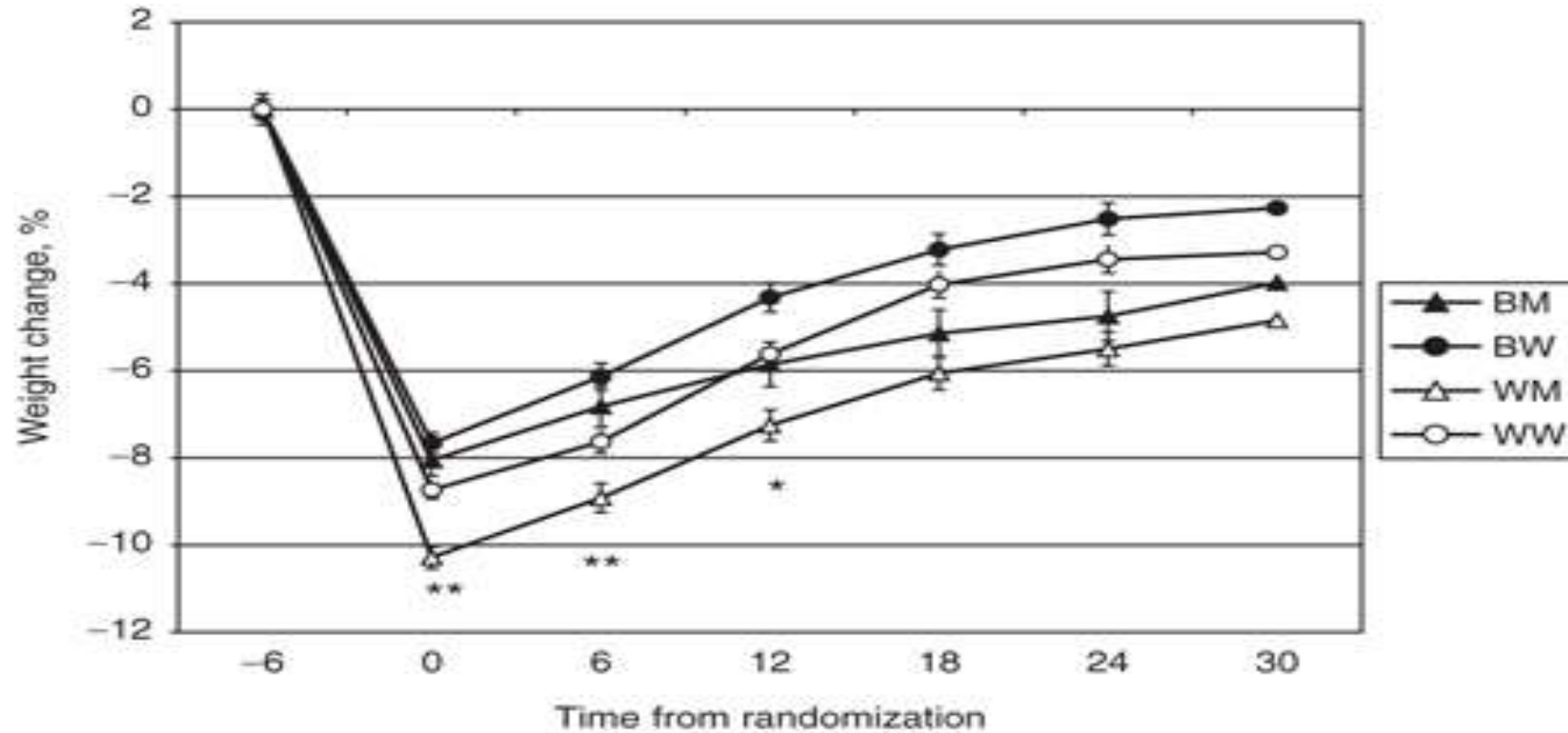
PA-SIGNIFICANT

FOCUSING ON MORE CARDIORESPIRATORY FUNCTIONING IS THE KEY

Results—Over the 20 year follow-up, the sample gained weight (BMI 24.5–31.1 kg/m²) and the prevalence of MHO was 47% of overweight/obese at follow-up. After adjusting for changes in CRF, diet and weight change, physical activity and macronutrient intake were not independently associated with MHO ($p > 0.05$), while changes in CRF (fit-unfit: RR (95%) = 0.58, 0.52–0.66; unfit-unfit: RR = 0.67, 0.58–0.76, versus fit-fit) and weight (gain: RR (95%) = 0.54, 0.43–0.67; cycle: RR = 0.74, 0.57–0.94; versus stable) were independently associated with MHO.

Conclusion—Focusing on high CRF and strategies to limit weight gain may be important for individuals with overweight and obesity in early to mid-adulthood to maintain a metabolically healthy profile.

Predictors of Long-Term Weight Loss in Adults With Modest Initial Weight Loss, by Sex and Race



BMI RANGE-25-45 kg/m²

Obesity, Volume: 20, Issue: 9, Pages: 1820-1828, First published: 17 October 2012,)

Discussion

Sitting Time, Type, and Context Among Long-Term Weight-Loss Maintainers

Weight-loss maintainers reported less time sitting than weight-stable individuals with obesity.

PMID: 34029443 DOI: 10.1002/oby.23148

Abstract

Objective: This study aimed to investigate sitting time, the home sedentary environment, and physical activity among weight-loss maintainers in WW (formerly Weight Watchers).

Methods: Participants were 4,305 weight-loss maintainers who had maintained ≥ 9.1 kg of weight loss (24.7 kg on average) for 3.3 years and had an average current BMI of 27.6 kg/m². A control group of weight-stable individuals with obesity (n = 619) had an average BMI of 38.9 kg/m². The Multicontext Sitting Time Questionnaire and Paffenbarger physical activity questionnaire were administered.

Results: Weight-loss maintainers versus controls spent 3 hours less per day sitting during the week (10.9 vs. 13.9; $\eta_p^2 = 0.039$; P = 0.0001) and weekends (9.7 vs. 12.6; $\eta_p^2 = 0.038$). Weight-loss maintainers versus controls spent 1 hour less per day in non-work-related sitting using a computer or video games during the week (1.4 vs. 2.3; $\eta_p^2 = 0.03$; P = 0.0001) and weekends (1.5 vs. 2.5; $\eta_p^2 = 0.03$; P = 0.0001). Weight-loss maintainers versus controls had similar numbers of sedentary-promoting devices (15.8 vs. 14.8) and expended significantly more calories per week in physical activity (1,835 vs. 785; $\eta_p^2 = 0.036$; P = 0.0001).

Conclusion

- OBESITY is a complex disease
- Every one needs personalized care
- Three months time point weight failure is indicative of poor weight maintenance
- Multivariate analysis only two predictors : EWL at 3 months and Sitting time at 3 months were independent risk factors for sustainable weight loss



THANK YOU IFSO 2023
THANK YOU- GRAZIE NAPLES

